Information Bulletin 512 August 2016

Mississippi Annual Cool-Season Forage Crop

VARIETY TRIALS, 2015–16

MISSISSIPPI'S OFFICIAL VARIETY TRIALS

MISSISSIPPI STATE UNIVERSITY™
MS AGRICULTURAL AND
FORESTRY EXPERIMENT STATION

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This report contains data generated as part of the Mississippi Agricultural and Forestry Experiment Station. Joint sponsorship by the organizations listed on Page 17 is gratefully acknowledged.

Trade names of commercial and public varieties tested in this report are included only for clarity and understanding. All available names (i.e., trade names, experiment code names or numbers, chemical names, etc.) and varieties, products or source seed in this research are listed on Page 17.

Mississippi Annual Cool-Season Forage Crop Variety Trials, 2015–16

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Find variety trial information online at ***mafes.msstate.edu/variety-trials***.

Mississippi Annual Cool-Season Forage Crop Variety Trials, 2015–16

Introduction

Several varieties of forage crops are evaluated every year in Mississippi Agricultural and Forestry Experiment Station (MAFES) small-plot forage trials. Entries are provided by seed companies and forage and breeding programs at state universities. Experimental and commercially available varieties are tested at one or more locations across Mississippi. All entries from privately owned companies are tested on a fee basis. Standard varieties may be added by the MAFES forage variety-testing program as a reference for comparison purposes. In addition, varieties of interest may also be added when applicable. Sources of seed are presented in Table 24.

This information bulletin contains data from eight small grain, 39 annual ryegrass, and 18 annual clover varieties. Testing during 2015–16 was conducted at the North Mississippi Branch Experiment Station in Holly Springs, Leveck Animal Research Center Forage Unit on the Mississippi State University campus, Coastal Plain Branch Experiment Station in Newton, and White Sands Research Unit in Poplarville. Data found in Table 1 show the total monthly rainfall distribution during the growing season at each location. Average high and low temperatures can be used from Table 2 as a reference to evaluate relative cold tolerance among varieties.

Data presented in Tables 4–23 can be used to evaluate the performance of each forage crop within its respective trial. Mean and harvest comparisons were evaluated statistically by using the least significant difference (LSD) test at the probability level of $\alpha = 0.05$. The LSD value represents the amount of yield that must be observed between any two varieties to determine if the differences were due to variety variation alone.

Table 1. Rainfall at each location from September 2015 to June 2016.

Location	2015				2016					
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
	in	*in*	*in*	*in*	*in*	*in*	*in*	*in*	*in*	*in*
Holly Springs	1.03	2.29	6.18	4.77	2.27	5.39	11.04	4.04	3.31	2.51
Starkville	1.50	2.47	8.35	7.51	4.48	8.34	7.73	4.34	3.21	3.88
Newton	2.02	4.81	11.78	8.22	3.14	5.44	9.98	6.69	3.29	4.43
Poplarville	3.08	5.52	6.98	7.80	3.54	6.57	11.82	6.71	3.47	4.92

Table 2. Average high and low temperatures for each location from September 2015 to June 2016.

Month	Holly Springs		Starkville		Newton		Poplarville	
	H	L	H	L	H	L	H	L
	°F	°F	°F	°F	°F	°F	°F	°F
				2015				
Sept.	82	62	82	62	85	64	88	72
Oct.	73	52	76	52	76	55	77	60
Nov.	70	35	74	36	76	40	80	44
Dec.	68	36	72	37	75	41	78	46
				2016				
Jan.	61	24	60	26	63	34	66	38
Feb.	62	30	65	34	68	38	72	42
March	68	38	69	40	72	47	77	48
April	72	51	68	63	75	55	78	58
May	78	56	81	58	82	61	80	63
June	78	72	84	69	88	79	86	78

Protocol

Annual ryegrass, small grains, and annual clover trials across the state were established from late September until the first week of October in 2015. At all locations, soil samples were taken and analyzed by the MSU Soil Testing Laboratory. Trial areas were amended with lime and fertilized with phosphorus (P_2O_5) and potassium (K_2O) according to the soil-test recommendations for individual species. The annual ryegrass and small grain trials were fertilized with 300 pounds of 15-5-10 at the time of planting and with 50 pounds of N per acre after each harvest using urea ammonium sulfate (33-0-0S). Annual clover trials were fertilized with 50 pounds per acre of 0-0-60 (K_2O) at planting and an additional 100 pounds per acre of phosphorus (P_2O_5) and potassium (K_2O) early in the spring using 0-20-20.

Plots were 6x10 feet and planted using a precision cone seeder on a prepared seedbed. Trial design was a randomized complete block replicated four times. Recommended seeding rates were used and are presented in Table 3. All trials were harvested when 75% of the plots achieved 15 inches of growth. All plots were harvested to a stubble height of 3 inches. Plots were harvested using a Ferris zero-turn mower equipped with a bagging system that collected a 4.3x10-foot swath to calculate total yield. A subsample was collected and dried at 130°F until constant weight was achieved to calculate dry matter (DM) concentration. Data were analyzed using the General Linear Model (PROC GLM) of SAS, and mean separation was conducted using LSD at $\alpha = 0.05$.

Table 3. Seeding rates.

Type/Species	Seed weight
	lb/A
Small Grains	
Rye	100
Oat	100
Annual Ryegrass	30
Annual Clovers	
Arrowleaf	10
Berseem	25
Balansa	4
Ball	3
Crimson	30
Persian	8

Annual Ryegrass

Annual ryegrass is the most important and versatile cool-season annual grass for livestock producers in Mississippi. In pasture and hay systems, annual ryegrass is a popular forage because of its ease of establishment, high nutritive value, high yields, good reseeding ability, and adaptability to a wide range of soil types. Annual ryegrass can be established in pure stands or mixed with small grains and/or clovers for cool-season forage production. For these reasons, annual ryegrass is a staple for many cool-season grazing programs in Mississippi. Planting date varies with location. Overall, the best planting time is September for prepared seedbed or October if overseeded on a warm-season perennial grass pasture.

Seeding rates are 30 pounds per acre for pure stands and 20 pounds per acre for mixtures with small grains and/or clovers. Annual ryegrass grows best at a soil pH of 6.0 to 7.0. Phosphorus and potassium levels should be above the medium range for optimum yields. Annual ryegrass is very responsive to nitrogen fertilizer, and its use should be split into two to four applications during the growing season. When annual ryegrass is established with clovers, a single nitrogen application in early winter is often recommended to limit annual ryegrass competition with the clover. Reasonable productivity can be expected from November to May in the southern part of Mississippi and February to May in the northern part.

Annual ryegrass normally should be allowed to reach a height of 8 inches before grazing begins. Typical stocking rates are 700 pounds of live weight per acre in winter and 1,400–2,000 pounds per acre in spring. Typically, average daily gains for respective animal class are suckling calves, 2.75 pounds; stocker calves, 2.3 pounds; yearling horses, 1.75 pounds; lambs, 0.3 pounds. However, all of these factors are greatly influenced by environmental conditions and management factors. Data in Tables 4–7 present the yield performance of ryegrass varieties at four locations within the state, ranging from Holly Springs in the north to Poplarville in the south.

Entries were further analyzed by ploidy level represented in Tables 8–11. Ploidy level refers to the number of chromosome sets in a biological cell and is often used in characterizing ryegrass varieties as either diploid (2x) or tetraploid (4x). Whether ploidy level is advantageous to a specific variety in regards to performance is more dependent on location.

Table 4. Ryegrass yields by harvest date and total yield, Holly Springs.[1]

Variety	Harvest date		Total yield
	5/9/16	5/25/16	
	lb/A	*lb/A*	*lb/A*
07-WW	6285	326	6611
Andes	4412	345	4758
Attain	6000	819	6819
BAR LM 09124	5544	284	5829
BAR LM 09129	6500	603	7103
BAR LM 09137	6139	241	6379
BAR LM 10200	7001	370	7371
BAR LM 10202	5312	453	5765
BAR LM 15425	7972	387	8359
BAR LM 15426	8796	310	9106
BAR LM 15427	6819	371	7190
Big Boss	6800	420	7220
Cedence	6500	467	6967
Diamond T	5038	557	5595
Flying A	5870	563	6433
Fria	6630	528	7158
GA-101-M	4300	424	4724
GALM1401	5200	763	5963
GALM1403	5187	548	5735
GO-15-LN2	5525	365	5890
IS-LWD 8	5260	625	5885
Jackson	5418	612	6030
Jumbo	7578	393	7970
Lonestar	5600	493	6093
M2GVS	5501	443	5944
Marshall	3376	543	3919
Maximus	6400	321	6721
ME4	5204	384	5588
ME-94	5140	603	5743
Meroa	6300	582	6882
Nelson	4565	525	5090
Passerel Plus	5200	554	5754
Prine	5419	421	5841
PS12	5325	623	5948
PS15	6002	356	6358
Ration	6200	441	6641
TAMTBO	7100	316	7416
Tetrastar	5800	437	6237
Winterhawk	6400	420	6820
Mean	5888	468	6355
$LSD_{(0.05)}$	NS	285	NS
CV, %	36	42	45

[1]NS: Not Significant
Planted: 10/2/2015
Soil type: Grenada Silt Loam

Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest

Table 5. Ryegrass yields by harvest date and total yield, Starkville.[1]

Variety	Harvest date				Total yield
	1/14/16	3/9/16	3/29/16	4/29/16	
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*
07-WW	1023	390	1435	1649	4497
Andes	765	361	1323	1888	4336
Attain	995	356	1456	2304	5111
BAR LM 09124	660	203	1372	1584	3820
BAR LM 09129	912	348	1512	1749	4522
BAR LM 09137	756	307	1042	1677	3782
BAR LM 10200	706	302	1033	1850	3891
BAR LM 10202	733	282	1412	1237	3664
BAR LM 15425	966	390	1491	1887	4733
BAR LM 15426	884	336	1582	1688	4489
BAR LM 15427	880	269	1307	1745	4200
Big Boss	1235	439	1683	1973	5330
Cedence	788	190	1396	2134	4508
Diamond T	1023	344	1516	1679	4562
Flying A	1462	394	1356	2255	5467
Fria	1474	185	1360	1813	4833
GA-101-M	1128	290	1532	2429	5379
GALM1401	1297	462	1592	2303	5654
GALM1403	1260	461	1506	2108	5335
GO-15-LN2	1078	302	1517	2159	5056
IS-LWD 8	1005	498	1377	1575	4455
Jackson	637	325	1269	1658	3889
Jumbo	1251	234	1419	2119	5023
Lonestar	1400	479	1229	2377	5485
M2GVS	1225	310	1169	2018	4722
Marshall	1409	558	1772	2722	6461
Maximus	1317	611	1630	1502	5060
ME4	1757	403	1504	1742	5405
ME-94	1167	344	1627	2013	5152
Meroa	880	395	1100	1624	3998
Nelson	1021	336	1060	1943	4360
Passerel Plus	1522	409	1535	1783	5249
Prine	1571	311	1464	2237	5582
PS12	1458	442	1438	1865	5203
PS15	924	312	1493	2264	4992
Ration	894	357	1597	2009	4856
TAMTBO	820	339	1228	1573	3960
Tetrastar	1309	461	1326	2073	5168
Winterhawk	1120	371	1870	2273	5633
Mean	1095	362	1424	1935	4816
$LSD_{(0.05)}$	747	NS	536	707	1225
CV, %	37	36	26	26	18

[1]NS: Not Significant
Planted: 10/1/2015
Soil type: Marietta Fine Sandy Loam
Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest

Table 6. Ryegrass yields by harvest date and total yield, Newton.[1]

Variety	Harvest date			Total yield
	2/18/16	3/17/16	4/26/16	
	lb/A	*lb/A*	*lb/A*	*lb/A*
07-WW	693	6149	2022	8864
Andes	601	4806	2594	8001
Attain	495	6418	2540	9453
BAR LM 09124	512	2923	2601	6036
BAR LM 09129	444	4683	1535	6661
BAR LM 09137	296	4168	2891	7355
BAR LM 10200	327	5001	1372	6700
BAR LM 10202	317	5340	2976	8634
BAR LM 15425	329	3562	2121	6012
BAR LM 15426	322	3885	1740	5948
BAR LM 15427	372	3972	2241	6585
Big Boss	461	4604	2352	7417
Cedence	405	6388	3075	9868
Diamond T	432	6384	2143	8959
Flying A	787	4385	1764	6935
Fria	720	4201	2457	7378
GA-101-M	784	5154	2117	8056
GALM1401	554	6500	2654	9708
GALM1403	816	5119	1314	7250
GO-15-LN2	674	5772	2299	8744
IS-LWD 8	430	8328	2827	11585
Jackson	728	5998	2274	8999
Jumbo	514	5733	3137	9384
Lonestar	805	5393	2177	8375
M2GVS	668	5169	2962	8798
Marshall	840	8002	3150	11992
Maximus	576	7251	2660	10487
ME4	775	4295	2699	7768
ME-94	419	6339	2729	9486
Meroa	314	3914	2042	6271
Nelson	451	4484	2477	7412
Passerel Plus	771	6306	2640	9718
Prine	598	5493	2321	8413
PS12	783	6659	2772	10215
PS15	636	5138	3069	8843
Ration	852	5256	2430	8538
TAMTBO	483	3166	2464	6113
Tetrastar	634	5170	2797	8602
Winterhawk	714	4960	2292	7966
Mean	573	5294	2429	8296
$LSD_{(0.05)}$	NS	NS	1201	3359
CV, %	22	24	18	28

[1]NS: Not significant
Planted: 10/7/16
Soil type: Prentiss Sandy Loam

Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest

Table 7. Ryegrass yields by harvest date and total yield, Poplarville.[1]

Variety	Harvest date			Total yield
	2/18/16	3/15/16	5/5/16	
	lb/A	*lb/A*	*lb/A*	*lb/A*
07-WW	757	2331	2736	5824
Andes	735	2009	4152	6896
Attain	912	2680	4370	7962
BAR LM 09124	601	1955	2371	4926
BAR LM 09129	1312	2014	4317	7644
BAR LM 09137	428	1877	2811	5116
BAR LM 10200	689	2653	1584	4927
BAR LM 10202	857	1745	3604	6205
BAR LM 15425	786	2261	4212	7259
BAR LM 15426	1139	1932	3395	6466
BAR LM 15427	501	2334	4189	7024
Big Boss	1128	2883	4514	8524
Cedence	636	2811	4092	7539
Diamond T	614	1909	3676	6198
Flying A	1020	2340	5508	8868
Fria	1467	2829	4744	9040
GA-101-M	1242	2257	4489	7989
GALM1401	639	2436	3696	6772
GALM1403	1169	2644	3577	7390
GO-15-LN2	1201	2699	4296	8196
IS-LWD 8	788	2862	3127	6777
Jackson	519	2546	3128	6192
Jumbo	978	2772	2635	6385
Lonestar	1451	3001	4791	9243
M2GVS	602	2994	3061	6657
Marshall	1190	2949	3048	7187
Maximus	1527	2408	4549	8484
ME4	1619	2431	4020	8071
ME-94	926	2393	5090	8409
Meroa	1156	1614	3851	6620
Nelson	1516	2365	5571	9452
Passerel Plus	1359	2225	3802	7387
Prine	958	2655	4602	8215
PS12	1187	2352	4898	8438
PS15	931	2513	4490	7935
Ration	991	2629	3643	7263
TAMTBO	941	2242	4664	7847
Tetrastar	1169	2396	4648	8213
Winterhawk	1241	2695	4398	8334
Mean	997	2427	3958	7381
$LSD_{(0.05)}$	NS	608	447	2241
CV, %	40	17	31	21

[1]NS: Not significant
Planted: 10/8/2015
Soil type: Basin Loam

Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest

Table 8. Ryegrass yields by ploidy level, Holly Springs.[1]

Ploidy	Harvest date		Total yield
	5/9/16	5/25/16	
	lb/A	*lb/A*	*lb/A*
Diploid	6200	513	6713
Tetraploid	5726	425	6151
Mean	5963	469	6432
$LSD_{(0.05)}$	NS	72	NS
CV, %	42	45	32

[1]NS: Not significant

Table 9. Ryegrass yields by ploidy level, Starkville.[1]

Ploidy	Harvest date				Total yield
	1/14/16	3/9/16	3/29/16	4/29/16	
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Diploid	1270	377	1485	2111	5244
Tetraploid	1002	345	1574	1812	4735
Mean	1136	361	1529	1961	4989
$LSD_{(0.05)}$	153	NS	NS	177	421
CV, %	39	42	45	36	24

[1]NS: Not significant

Table 10. Ryegrass yields by ploidy level, Newton.[1]

Ploidy	Harvest date			Total yield
	2/18/16	3/17/16	4/26/16	
	lb/A	*lb/A*	*lb/A*	*lb/A*
Diploid	719	5510	2432	8661
Tetraploid	445	4610	2355	7422
Mean	582	5066	2393	8042
$LSD_{(0.05)}$	79	640	NS	804
CV, %	39	36	29	29

[1]NS: Not significant

Table 11. Ryegrass yields by ploidy level, Poplarville.[1]

Ploidy	Harvest date			Total yield
	2/18/16	3/16/16	5/5/16	
	lb/A	*lb/A*	*lb/A*	*lb/A*
Diploid	1110	3581	4178	7805
Tetraploid	944	2298	3883	7069
Mean	1027	2940	4031	7437
$LSD_{(0.05)}$	NS	156	NS	627
CV, %	45	18	35	24

[1]NS: Not significant

Small Grains

In Mississippi, small grains (oat, wheat, rye, and triticale) are not utilized as extensively for forage as annual ryegrass because of lower annual yields. However, some small grains tend to be more drought-tolerant than ryegrass and can provide highly digestible forage when other forages are not available. They also can be used for early grazing during the transition period from summer perennial grasses to annual ryegrass grazing. Rye and triticale are the most cold-tolerant of forage crops, so they have potential to continue vegetative growth during the fall and winter in Mississippi. Mississippi only utilizes about 154,000 acres in small-grain forages with the majority of those sown in oat or rye.

Table 12. Small grain yields, Holly Springs.[1]

Species/Variety	Harvest date 4/19/16
	lb/A
Oat	
Bob	625
LA99016	678
TAMO411	692
TAMO606	811
Rye	
Bates RS4	841
Elbon	977
NF95319B	729
NF97325	712
Mean	758
$LSD_{(0.05)}$	NS
CV, %	40

[1]NS: Not significant
Planted: 10/2/2015
Soil type: Grenada Silt Loam
Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest

Table 13. Small grain yields by harvest date and total yield, Starkville.[1]

Variety	Harvest date		Total yield
	2/14/16	3/9/16	
	lb/A	*lb/A*	*lb/A*
		Oat	
Bob	1188	745	1933
LA99016	773	1026	1799
TAMO411	912	613	1525
TAMO606	959	650	1609
		Rye	
Bates RS4	1185	990	2175
Elbon	930	714	1644
NF95319B	1211	1305	2516
NF97325	976	1115	2092
Mean	1017	895	1912
$LSD_{(0.05)}$	NS	NS	NS
CV, %	38	43	33

[1]NS: Not significant
Planted: 10/1/2015
Soil type: Marietta Fine Sandy Loam
Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest

Table 14. Small grain yields by harvest date and total yield, Newton.[1]

Variety	Harvest date			Total yield
	2/18/16	3/16/16	4/17/16	
	lb/A	*lb/A*	*lb/A*	*lb/A*
		Oat		
Bob	140	881	409	1430
LA99016	154	1029	307	1491
TAMO411	156	973	451	1580
TAMO606	134	897	417	1449
		Rye		
Bates RS4	152	1261	427	1840
Elbon	218	888	434	1540
NF95319B	113	770	251	1134
NF97325	107	577	344	1028
Mean	147	909	380	1436
$LSD_{(0.05)}$	NS	NS	NS	446
CV, %	42	31	35	21

[1]NS: Not significant
Planted: 10/7/2015
Soil type: Basin Loam
Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest

Table 15. Small grain yields by harvest date and total yield, Poplarville.[1]

Variety	Harvest date		Total yield
	2/8/16	3/15/16	
	lb/A	*lb/A*	*lb/A*
		Oat	
Bob	1716	1830	3546
LA99016	692	1668	2360
TAMO411	1429	1387	2816
TAMO606	1326	1271	2597
		Rye	
Bates RS4	1097	2107	3204
Elbon	904	1620	2525
NF95319B	1023	1643	2667
NF97325	803	1579	2382
Mean	1124	1638	2762
$LSD_{(0.05)}$	NS	NS	NS
CV, %	43	23	36

[1]NS: Not significant
Planted: 10/8/2015
Soil type: Basin Loam
Fertilizer: 300 lb/A 15-5-10 at planting and 50 lb/A of N (33-0-0S) after each harvest
Herbicide: 1 qt/A of GrazonNext® (aminopyralid & 2,4-D) after first harvest

Table 16. Small grain yields by species, Holly Springs.[1]

Species	Harvest date 4/19/16
	lb/A
Oat	701
Rye	815
Mean	758
$LSD_{(0.05)}$	NS
CV, %	38

[1]NS: Not significant

Table 17. Small grain yields by species, Starkville.[1]

Species	Harvest date		Total yield
	1/14/16	3/9/16	
	lb/A	*lb/A*	*lb/A*
Oat	957	758	1716
Rye	1075	1031	2106
Mean	1016	894	1911
$LSD_{(0.05)}$	NS	NS	NS
CV, %	37	44	32

[1]NS: Not significant

Table 18. Small grain yields by species, Newton.[1]

Variety	Harvest date			Total yield
	2/18/16	3/16/16	4/17/16	
	lb/A	*lb/A*	*lb/A*	*lb/A*
Oat	146	945	396	1487
Rye	147	873	364	1385
Mean	147	909	380	1436
$LSD_{(0.05)}$	NS	NS	NS	NS
CV, %	49	35	36	25

[1]NS: Not significant

Table 19. Small grain yields by species, Poplarville.[1]

Species	Harvest date		Total yield
	2/12/16	3/14/16	
	lb/A	*lb/A*	*lb/A*
Oat	1290	1538	2829
Rye	957	1737	2694
Mean	1123	1637	2761
$LSD_{(0.05)}$	NS	NS	NS
CV, %	46	25	35

[1]NS: Not significant

Annual Clover

Annual clovers may reduce nitrogen input and improve forage quality in pastures. For this reason, they can be beneficial in Mississippi when interseeded into annual cool-season grass pastures. Arrowleaf clover has been a highly productive clover with excellent reseeding potential. It matures later than most annual legumes and can grow 2–4 feet tall. Arrowleaf clover remains more productive if grazed to a height of 2–4 inches in early spring. However, if it is cut too late in maturity, regrowth will be limited. Crimson clover is an early-maturing clover that produces excellent forage. However, it has relatively poor reseeding abilities, necessitating reseeding each fall. Crimson clover will produce more forage at lower temperatures than other clovers. Ball clover is very tolerant to poor drainage, is more tolerant to acidity than crimson clover, and tolerates heavy grazing while maintaining good reseeding potential. Berseem clover is tolerant of alkaline and wet soils, though most varieties are not cold-tolerant.

Table 20. Annual clover yields, Holly Springs.[1]

Species/Variety	Harvest date 4/28/16
	lb/A
Arrowleaf	
Blackhawk	1763
CEFALU	2559
Yuchi	1963
Zulu II	3241
Balansa	
Bolta	3630
Fixation	1944
Frontier	1925
GO-15-F2	1706
GO-15F3	1609
GO-15-HV	1931
GO-15-MV	2235
Berseem	
Bigbee	2099
Frosty	1589
Crimson	
Common	1753
White Cloud	2637
Persian	
Laser	1224
Nitro Plus	1486
SB24	1202
Mean	2028
$LSD_{(0.05)}$	794
CV, %	27

[1]Planted: 10/2/2015
Soil type: Grenada Silt Loam
Fertilizer: 100 lb/A of 0-0-60
Herbicide: 5 oz/A of Pursuit® (imazethapyr)

Table 21. Annual clover yields by harvest and total yield, Starkville.[1]

Variety	Harvest date		Total yield
	3/23/16	5/3/16	
	lb/A	*lb/A*	*lb/A*
		Arrowleaf	
Blackhawk	376	1566	1941
CEFALU	398	1036	1434
Yuchi	518	1412	1930
Zulu II	631	1366	1997
		Balansa	
Bolta	492	1002	1494
Fixation	694	1426	2120
Frontier	568	717	1285
GO-15-F2	801	1243	2044
GO-15F3	682	1635	2317
GO-15-HV	568	1469	2037
GO-15-MV	977	1198	2175
		Berseem	
Bigbee	728	1293	2021
Frosty	614	1007	1622
		Crimson	
Common	1243	1587	2831
White Cloud	742	1668	2410
		Persian	
Laser	444	1159	1604
Nitro Plus	472	1173	1645
SB24	327	1416	1742
Mean	626	1298	1925
$LSD_{(0.05)}$	NS	338	709
CV, %	35	18	26

[1]NS: Not significant
Planted: 10/1/2015
Soil type: Marietta Fine Sandy Loam
Fertilizer: 100 lb/A of 0-0-60
Herbicide: 5 oz/A of Pursuit® (imazethapyr)

Table 22. Annual clover yields by harvest and total yield, Newton.[1]

Variety	Harvest date		Total yield
	3/16/16	5/24/16	
	lb/A	*lb/A*	*lb/A*
		Arrowleaf	
Blackhawk	546	1004	1550
CEFALU	224	644	867
Yuchi	568	1147	1714
Zulu II	363	621	984
		Balansa	
Bolta	577	514	1091
Fixation	356	1160	1516
Frontier	476	—	476
GO-15-F2	443	935	1378
GO-15F3	333	725	1058
GO-15-HV	528	1192	1721
GO-15-MV	222	494	715
		Berseem	
Bigbee	832	765	1598
Frosty	876	494	1369
		Crimson	
Common	609	738	1346
White Cloud	433	—	433
		Persian	
Laser	454	839	1293
Nitro Plus	767	—	767
SB24	855	—	855
Mean	526	805	1152
$LSD_{(0.05)}$	NS	NS	NS
CV, %	49	43	48

[1]NS: Not significant
Planted: 10/7/2015
Soil type: Prentiss Sandy Loam
Fertilizer: 100 lb/A of 0-0-60
Herbicide: 5 oz/A of Pursuit® (imazethapyr)

Table 23. Annual clover yields by harvest and total yield, Poplarville.[1]

Variety	Harvest date		Total yield
	3/15/16	5/6/16	
	lb/A	*lb/A*	*lb/A*
		Arrowleaf	
Blackhawk	624	3605	4229
CEFALU	484	2738	3223
Yuchi	347	3141	3488
Zulu II	736	2383	3118
		Balansa	
Bolta	631	1485	2116
Fixation	917	1511	2428
Frontier	723	2813	3535
GO-15-F2	425	2717	3142
GO-15F3	389	3023	3412
GO-15-HV	544	2624	3169
GO-15-MV	389	2741	3130
		Berseem	
Bigbee	1644	3076	4720
Frosty	1926	2483	4408
		Crimson	
Common	1573	2001	3574
White Cloud	766	1769	2535
		Persian	
Laser	740	2494	3235
Nitro Plus	1084	3402	4486
SB24	914	2907	3821
Mean	825	2606	3432
$LSD_{(0.05)}$	528	1267	1329
CV, %	45	34	27

[1]Planted: 10/8/2015
Soil type: Basin Loam
Fertilizer: 100 lb/A of 0-0-60
Herbicide: 5 oz/A of Pursuit® (imazethapyr)

Table 24. Sources of seed, 2015–16.

Species/Variety	Seed company/source	Species/Variety	Seed company/source
Annual Ryegrass		**Small Grains**	
Jumbo	Barenbrug USA	LA99016	Ragan + Massy
Maximus	Barenbrug USA	Bates RS4	Athens Seed Co.
BAR LM 15425	Barenbrug USA	TAMO 411	Specialty Seed
BAR LM 15426	Barenbrug USA	TAMO 606	Specialty Seed
BAR LM 15427	Barenbrug USA	NF97325	The Noble Foundation
BAR LM 09124	Barenbrug USA	NF95319B	The Noble Foundation
BAR LM 10200	Barenbrug USA		
BAR LM 10202	Barenbrug USA		
BAR LM 09129	Barenbrug USA		
BAR LM 09137	Barenbrug USA		
Prine	Lewis Seed	**Annual Clovers**	
Jackson	The Wax Company, LLC	White Cloud	Oregro Seeds, Inc.
M2GVS	The Wax Company, LLC	Zulu II	Barenbrug USA
Marshall	The Wax Company, LLC	CEFALU	Barenbrug USA
ME4	The Wax Company, LLC	Bolta	Barenbrug USA
ME-94	The Wax Company, LLC	Frontier	Barenbrug USA
Nelson	The Wax Company, LLC	Laser	Barenbrug USA
GA-101-M	University of Georgia	Nitro Plus	Barenbrug USA
GALM1403	University of Georgia	SB24	Saddle Butte AG, Inc.
GALM1401	University of Georgia	FIXATION	Grassland Oregon
Fria	Allied Seed, LLC	GO-15-MV	Grassland Oregon
IS-LWD 8	DLF	GO-15F3	Grassland Oregon
Andes	DLF	GO-15-F2	Grassland Oregon
Cedence	DLF	GO-15-HV	Grassland Oregon
GO-15-LN2	Grassland Oregon	Frosty	Grassland Oregon
Lonestar (Diploid)	Grassland Oregon	Blackhawk	Oregro Seeds, Inc.
Tetrastar (Tetraploid)	Grassland Oregon		
07-WW	Oregro Seeds, Inc.		
Diamond T	Oregro Seeds, Inc.		
Flying A	Oregro Seeds, Inc.		
TAMTBO	Oregro Seeds, Inc.		
Winterhawk	Oregro Seeds, Inc.		
Passerel Plus	Pennington Seed		
PS12	Pennington Seed		
PS15	Pennington Seed		
Big Boss	Smith Seed Services		
Meroa	Smith Seed Services		
Attain	Smith Seed Services		
Ration	Thomas AG Services, LLC		

MS AGRICULTURAL AND
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The mission of the Mississippi Agricultural and Forestry Experiment Station and the College of Agriculture and Life Sciences is to advance agriculture and natural resources through teaching and learning, research and discovery, service and engagement which will enhance economic prosperity and environmental stewardship, to build stronger communities and improve the health and well-being of families, and to serve people of the state, the region and the world.

George M. Hopper, Director

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